

SEQUENCE LISTING

<110> IMAEDA, TAKAO

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SHIMAMURA, TAKASHI

KOHDA, KATSUNORI

MURAMOTO, NOBUHIKO

<120> METHOD FOR PRODUCING ANTIMICROBIAL PROTEIN AND FUSION PROTEIN

<130> 208377US0

<150> JP2000-161090

<151> 2000-05-26

<160> 12

<170> PatentIn version 3.0

<210> 1

<211> 392

<212> DNA

<213> Hordeum vulgare

<220>

<221> CDS

<222> (1)..(390)

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ctg ggt cgt aac tgc tat aac ctg tgc cgt gtt cgt ggt gcg cag aaa				96
Leu Gly Arg Asn Cys Tyr Asn Leu Cys Arg Val Arg Gly Ala Gln Lys				
20	25	30		
ctg tgc gcg ggt gtt tgc cgt tgc aaa ctg acc agc agc ggt aaa tgc				144
Leu Cys Ala Gly Val Cys Arg Cys Lys Leu Thr Ser Ser Gly Lys Cys				
35	40	45		
ccg acc ggt ttt ccg aaa atg att gaa ggt cgt acg ctg gcg ctg gtt				192
Pro Thr Gly Phe Pro Lys Met Ile Glu Gly Arg Thr Leu Ala Leu Val				
50	55	60		
agc aac agc gat gaa ccg gat acc gtt aaa tat tgc aac ctg ggt tgc				240
Ser Asn Ser Asp Glu Pro Asp Thr Val Lys Tyr Cys Asn Leu Gly Cys				
65	70	75	80	
cgt gcg agc atg tgc gat tat atg gtt aac gcg gcg gcg gat gat gaa				288
Arg Ala Ser Met Cys Asp Tyr Met Val Asn Ala Ala Asp Asp Glu				
85	90	95		
gaa atg aaa ctg tat ctg gaa aac tgc ggt gat gcg tgc gtt aac ttt				336
Glu Met Lys Leu Tyr Leu Glu Asn Cys Gly Asp Ala Cys Val Asn Phe				
100	105	110		
tgc aac ggt gat gcg ggt ctg acc agc ctg acc gcg tga tag gat ccg				384
Cys Asn Gly Asp Ala Gly Leu Thr Ser Leu Thr Ala Asp Pro				
115	120	125		
gct gct aa				392
Ala Ala				
<210> 2				
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Glu Lys His Met Ile Glu Gly Arg Met Lys Ser Cys Cys Arg Ser Thr				
1	5	10	15	
Leu Gly Arg Asn Cys Tyr Asn Leu Cys Arg Val Arg Gly Ala Gln Lys				
20	25	30		
Leu Cys Ala Gly Val Cys Arg Cys Lys Leu Thr Ser Ser Gly Lys Cys				
35	40	45		

Pro Thr Gly Phe Pro Lys Met Ile Glu Gly Arg Thr Leu Ala Leu Val
50 55 60

Ser Asn Ser Asp Glu Pro Asp Thr Val Lys Tyr Cys Asn Leu Gly Cys
65 70 75 80

Arg Ala Ser Met Cys Asp Tyr Met Val Asn Ala Ala Ala Asp Asp Glu
85 90 95

Glu Met Lys Leu Tyr Leu Glu Asn Cys Gly Asp Ala Cys Val Asn Phe
100 105 110

Cys Asn Gly Asp Ala Gly Leu Thr Ser Leu Thr Ala
115 120

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<213> Hordeum vulgare

<400> 3

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<212> DNA

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<222> (1)..(1647)

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Asp Lys His Met Ile Glu Gly Arg Lys Ser Cys Cys Arg Ser Thr Leu
1 5 10 15

ggt cgt aac tgc tat aac ctg tgc cgt gtt cgt ggt gcg cag aaa ctg Gly Arg Asn Cys Tyr Asn Leu Cys Arg Val Arg Gly Ala Gln Lys Leu 20 25 30	96
tgc gcg ggt gtt tgc cgt tgc aaa ctg acc agc agc ggt aaa tgc ccg Cys Ala Gly Val Cys Arg Cys Lys Leu Thr Ser Ser Gly Lys Cys Pro 35 40 45	144
acc ggt ttt ccg aaa atg att gaa ggt cgt tcg gat gtt gtc cag ctg Thr Gly Phe Pro Lys Met Ile Glu Gly Arg Ser Asp Val Val Gln Leu 50 55 60	192
aag aag gac acc ttc gac gac ttc atc aag acg aat gac ctt gtt ctc Lys Lys Asp Thr Phe Asp Asp Phe Ile Lys Thr Asn Asp Leu Val Leu 65 70 75 80	240
gcc gaa ttc ttc gcg ccg tgg tgc ggt cac tgc aag gct ctc gcc ccc Ala Glu Phe Phe Ala Pro Trp Cys Gly His Cys Lys Ala Leu Ala Pro 85 90 95	288
gag tac gag gag gct gcg acc aca ctg aag gag aag aac atc aag ctc Glu Tyr Glu Glu Ala Ala Thr Thr Leu Lys Glu Lys Asn Ile Lys Leu 100 105 110	336
gcc aag gtg gac tgc aca gag gag acg gac ctc tgc caa caa cat ggt Ala Lys Val Asp Cys Thr Glu Glu Thr Asp Leu Cys Gln Gln His Gly 115 120 125	384
gtt gag ggc tac ccg act ctc aag gtc ttc cgc ggc ctt gac aac gtc Val Glu Gly Tyr Pro Thr Leu Lys Val Phe Arg Gly Leu Asp Asn Val 130 135 140	432
tcc ccc tac aag ggc cag cgc aag gct gct atc acc tcg tac atg Ser Pro Tyr Lys Gly Gln Arg Lys Ala Ala Ile Thr Ser Tyr Met 145 150 155 160	480
atc aag cag tct ctg ccc gcc gtg tcc gag gtc acg aag gac aac ctg Ile Lys Gln Ser Leu Pro Ala Val Ser Glu Val Thr Lys Asp Asn Leu 165 170 175	528
gag gag ttc aag aag gcc gac aag gcc gtc ctt gtc gcc tat gtg gat Glu Glu Phe Lys Lys Ala Asp Lys Ala Val Leu Val Ala Tyr Val Asp 180 185 190	576
gct tcc gac aag gcg tcc agt gag gtt ttc acc cag gtc gcc gag aag Ala Ser Asp Lys Ala Ser Ser Glu Val Phe Thr Gln Val Ala Glu Lys 195 200 205	624
ctg cgc gac aac tac ccg ttc ggc tcc agc agc gat gct gcg ctg gcc Leu Arg Asp Asn Tyr Pro Phe Gly Ser Ser Asp Ala Ala Leu Ala 210 215 220	672
gag gct gag ggc gtc aag gct ccc gct atc gtc ctt tac aag gac ttt Glu Ala Glu Gly Val Lys Ala Pro Ala Ile Val Leu Tyr Lys Asp Phe 225 230 235 240	720
gat gag ggc aag gcg gtc ttc tcc gag aag ttc gag gtg gag gcg atc Asp Glu Gly Lys Ala Val Phe Ser Glu Lys Phe Glu Val Glu Ala Ile 245 250 255	768

gag aag ttc gcc aag acg ggc gcc acc ccg ctc att ggc gag att ggc Glu Lys Phe Ala Lys Thr Gly Ala Thr Pro Leu Ile Gly Glu Ile Gly 260 265 270	816
ccc gaa acc tac tcc gac tac atg tcg gcc ggc atc cct ctg gcc tac Pro Glu Thr Tyr Ser Asp Tyr Met Ser Ala Gly Ile Pro Leu Ala Tyr 275 280 285	864
att ttc gcc gaa acg gcc gag gag cgg aag gag ctc agc gac aag ctc Ile Phe Ala Glu Thr Ala Glu Glu Arg Lys Glu Leu Ser Asp Lys Leu 290 295 300	912
aag ccg atc gcc gag gct cag cgc ggc gtc att aac ttt ggt act att Lys Pro Ile Ala Glu Ala Gln Arg Gly Val Ile Asn Phe Gly Thr Ile 305 310 315 320	960
gac gcc aag gct ttt ggt gcc cac gcc ggc aac ctg aac ctg aag acc Asp Ala Lys Ala Phe Gly Ala His Ala Gly Asn Leu Asn Leu Lys Thr 325 330 335	1008
gac aag ttc ccc gcc ttc gcc atc cag gag gtc gcc aag aac cag aag Asp Lys Phe Pro Ala Phe Ala Ile Gln Glu Val Ala Lys Asn Gln Lys 340 345 350	1056
ttc ccc ttc gat cag gag aag gag atc acc ttc gag gcg atc aag gct Phe Pro Phe Asp Gln Glu Lys Glu Ile Thr Phe Glu Ala Ile Lys Ala 355 360 365	1104
ttc gtc gac gac ttt gtc gcc ggt aag atc gag ccc agc atc aag tcg Phe Val Asp Asp Phe Val Ala Gly Lys Ile Glu Pro Ser Ile Lys Ser 370 375 380	1152
gag ccg atc cct gag aag cag gag ggc ccc gtc acc gtc gtc gtt gcc Glu Pro Ile Pro Glu Lys Gln Glu Gly Pro Val Thr Val Val Val Ala 385 390 395 400	1200
aag aac tac aat gag atc gtc ctg gac gac acc aag gat gtg ctg att Lys Asn Tyr Asn Glu Ile Val Leu Asp Asp Thr Lys Asp Val Leu Ile 405 410 415	1248
gag ttc tac gcc ccg tgg tgc ggc cac tgc aag gcc ctg gct ccc aag Glu Phe Tyr Ala Pro Trp Cys Gly His Cys Lys Ala Leu Ala Pro Lys 420 425 430	1296
tac gag gag ctc ggc gcc ctg tat gcc aag agc gag ttc aag gac cgg Tyr Glu Glu Leu Gly Ala Leu Tyr Ala Lys Ser Glu Phe Lys Asp Arg 435 440 445	1344
gtc gtc atc gcc aag gtt gat gcc acg gcc aac gac gtt ccc gat gag Val Val Ile Ala Lys Val Asp Ala Thr Ala Asn Asp Val Pro Asp Glu 450 455 460	1392
atc cag gga ttc ccc acc atc aag ctg tac ccg gcc ggt gcc aag ggt Ile Gln Gly Phe Pro Thr Ile Lys Leu Tyr Pro Ala Gly Ala Lys Gly 465 470 475 480	1440
cag ccc gtc acc tac tct ggc tcg cgc act gtc gag gac ctc atc aag Gln Pro Val Thr Tyr Ser Gly Ser Arg Thr Val Glu Asp Leu Ile Lys 485 490 495	1488

ttc atc gcc gag aac ggc aag tac aag gcc gcc atc tcg gag gat gcc Phe Ile Ala Glu Asn Gly Lys Tyr Lys Ala Ala Ile Ser Glu Asp Ala	500	505	510	1536
gag gag acg tcg tcc gca acc gag acg acc acc gag acg gcc acc aag Glu Glu Thr Ser Ser Ala Thr Glu Thr Thr Glu Thr Ala Thr Lys	515	520	525	1584
tcg gag gag gct gcc aag gag acg gcg acg gag cac gac gag ctc tga Ser Glu Glu Ala Ala Lys Glu Thr Ala Thr Glu His Asp Glu Leu	530	535	540	1632
tag gat ccg gct gct aa Asp Pro Ala Ala	545			1649

<210> 5

<211> 543

<212> PRT

<213> Hordeum vulgare

<400> 5

Asp Lys His Met Ile Glu Gly Arg Lys Ser Cys Cys Arg Ser Thr Leu	5	10	15
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Gly Arg Asn Cys Tyr Asn Leu Cys Arg Val Arg Gly Ala Gln Lys Leu	20	25	30
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Cys Ala Gly Val Cys Arg Cys Lys Leu Thr Ser Ser Gly Lys Cys Pro	35	40	45
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Thr Gly Phe Pro Lys Met Ile Glu Gly Arg Ser Asp Val Val Gln Leu	50	55	60
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Lys Lys Asp Thr Phe Asp Asp Phe Ile Lys Thr Asn Asp Leu Val Leu	65	70	75	80
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Ala Glu Phe Phe Ala Pro Trp Cys Gly His Cys Lys Ala Leu Ala Pro	85	90	95
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Glu Tyr Glu Glu Ala Ala Thr Thr Leu Lys Glu Lys Asn Ile Lys Leu	100	105	110
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Ala Lys Val Asp Cys Thr Glu Glu Thr Asp Leu Cys Gln Gln His Gly	115	120	125
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Val Glu Gly Tyr Pro Thr Leu Lys Val Phe Arg Gly Leu Asp Asn Val
130 135 140

Ser Pro Tyr Lys Gly Gln Arg Lys Ala Ala Ala Ile Thr Ser Tyr Met
145 150 155 160

Ile Lys Gln Ser Leu Pro Ala Val Ser Glu Val Thr Lys Asp Asn Leu
165 170 175

Glu Glu Phe Lys Lys Ala Asp Lys Ala Val Leu Val Ala Tyr Val Asp
180 185 190

Ala Ser Asp Lys Ala Ser Ser Glu Val Phe Thr Gln Val Ala Glu Lys
195 200 205

Leu Arg Asp Asn Tyr Pro Phe Gly Ser Ser Ser Asp Ala Ala Leu Ala
210 215 220

Glu Ala Glu Gly Val Lys Ala Pro Ala Ile Val Leu Tyr Lys Asp Phe
225 230 235 240

Asp Glu Gly Lys Ala Val Phe Ser Glu Lys Phe Glu Val Glu Ala Ile
245 250 255

Glu Lys Phe Ala Lys Thr Gly Ala Thr Pro Leu Ile Gly Glu Ile Gly
260 265 270

Pro Glu Thr Tyr Ser Asp Tyr Met Ser Ala Gly Ile Pro Leu Ala Tyr
275 280 285

Ile Phe Ala Glu Thr Ala Glu Glu Arg Lys Glu Leu Ser Asp Lys Leu
290 295 300

Lys Pro Ile Ala Glu Ala Gln Arg Gly Val Ile Asn Phe Gly Thr Ile
305 310 315 320

Asp Ala Lys Ala Phe Gly Ala His Ala Gly Asn Leu Asn Leu Lys Thr
325 330 335

Asp Lys Phe Pro Ala Phe Ala Ile Gln Glu Val Ala Lys Asn Gln Lys
340 345 350

Phe Pro Phe Asp Gln Glu Lys Glu Ile Thr Phe Glu Ala Ile Lys Ala
355 360 365

Phe Val Asp Asp Phe Val Ala Gly Lys Ile Glu Pro Ser Ile Lys Ser
370 375 380

Glu Pro Ile Pro Glu Lys Gln Glu Gly Pro Val Thr Val Val Val Ala
385 390 395 400

Lys Asn Tyr Asn Glu Ile Val Leu Asp Asp Thr Lys Asp Val Leu Ile
405 410 415

Glu Phe Tyr Ala Pro Trp Cys Gly His Cys Lys Ala Leu Ala Pro Lys
420 425 430

Tyr Glu Glu Leu Gly Ala Leu Tyr Ala Lys Ser Glu Phe Lys Asp Arg
435 440 445

Val Val Ile Ala Lys Val Asp Ala Thr Ala Asn Asp Val Pro Asp Glu
450 455 460

Ile Gln Gly Phe Pro Thr Ile Lys Leu Tyr Pro Ala Gly Ala Lys Gly
465 470 475 480

Gln Pro Val Thr Tyr Ser Gly Ser Arg Thr Val Glu Asp Leu Ile Lys
485 490 495

Phe Ile Ala Glu Asn Gly Lys Tyr Lys Ala Ala Ile Ser Glu Asp Ala
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Glu Glu Thr Ser Ser Ala Thr Glu Thr Thr Glu Thr Ala Thr Lys
515 520 525

Ser Glu Glu Ala Ala Lys Glu Thr Ala Thr Glu His Asp Glu Leu
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<212> PRT

<213> Hordeum vulgare

<400> 6

Asp Pro Ala Ala
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Leu Gly Arg Asn Cys Tyr Asn Leu Cys Arg Val Arg Gly Ala Gln Lys
20 25 30
ctg tgc gcg ggt gtt tgc cgt tgc aaa ctg acc agc agc ggt aaa tgc 144
Leu Cys Ala Gly Val Cys Arg Cys Lys Leu Thr Ser Ser Gly Lys Cys
30 35 40 45
ccg acc ggt ttt ccg aaa tga tag gat ccg gct gct aa 182
Pro Thr Gly Phe Pro Lys Asp Pro Ala Ala
50 55
<210> 8
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1 5 10 15
Leu Gly Arg Asn Cys Tyr Asn Leu Cys Arg Val Arg Gly Ala Gln Lys
20 25 30
Leu Cys Ala Gly Val Cys Arg Cys Lys Leu Thr Ser Ser Gly Lys Cys
35 40 45

Pro Thr Gly Phe Pro Lys
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<211> 4

<212> PRT

<213> Hordeum vulgare

<400> 9

Asp Pro Ala Ala

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<210> 10

<211> 284

<212> DNA

<213> Hordeum vulgare

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Gly Arg Asn Cys Tyr Asn Leu Cys Arg Val Arg Gly Ala Gln Lys Leu
20 25 30

tgc gcg ggt gtt tgc cgt tgc aaa ctg acc agc agc ggt aaa tgc ccg 144
Cys Ala Gly Val Cys Arg Cys Lys Leu Thr Ser Ser Gly Lys Cys Pro
35 40 45

acc ggt ttt ccg aaa atg att gaa ggt cgt gag acg tcg tcc gca acc 192
Thr Gly Phe Pro Lys Met Ile Glu Gly Arg Glu Thr Ser Ser Ala Thr
50 55 60

gag acg acc acc gag acg gcc acc aag tcg gag gag gct gcc aag gag 240
Glu Thr Thr Glu Thr Ala Thr Lys Ser Glu Glu Ala Ala Lys Glu
65 70 75 80

acg gcg acg gag cac gac gag ctc tga tag gat ccg gct gct aa 284
Thr Ala Thr Glu His Asp Glu Leu Asp Pro Ala Ala
85 90

<210> 11

<211> 88

<212> PRT

<213> Hordeum vulgare

<400> 11

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20 25 30

Cys Ala Gly Val Cys Arg Cys Lys Leu Thr Ser Ser Gly Lys Cys Pro
35 40 45

Thr Gly Phe Pro Lys Met Ile Glu Gly Arg Glu Thr Ser Ser Ala Thr
50 55 60

Glu Thr Thr Thr Glu Thr Ala Thr Lys Ser Glu Glu Ala Ala Lys Glu
65 70 75 80

Thr Ala Thr Glu His Asp Glu Leu
85

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<211> 4

<212> PRT

<213> Hordeum vulgare

<400> 12

Asp Pro Ala Ala
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